

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

## PCT

To:

see form PCT/ISA/220

### WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

7 12.06.04

Date of mailing  
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference  
see form PCT/ISA/220

**FOR FURTHER ACTION**  
See paragraph 2 below

International application No  
PCT/EP2004/002588

International filing date (day/month/year)  
12.03.2004

Priority date (day/month/year)

International Patent Classification (IPC) or both national classification and IPC  
H02J3/18

Applicant  
GENERAL ELECTRIC COMPANY

**1. This opinion contains indications relating to the following items:**

- ☒ Box No I Basis of the opinion
- ☒ Box No II Priority
- ☐ Box No III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No IV Lack of unity of invention
- ☒ Box No V Reasoned statement under Rule 43bis 1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No VI Certain documents cited
- ☐ Box No VII Certain defects in the international application
- ☐ Box No VIII Certain observations on the international application

**2. FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66 1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220

**3. For further details, see notes to Form PCT/ISA/220**

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**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/EP2004/002588

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**Box No. I    Basis of the opinion**

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1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
  - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b))
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
  - a. type of material:
    - ☐ a sequence listing
    - ☐ table(s) related to the sequence listing
  - b. format of material:
    - ☐ in written format
    - ☐ in computer readable form
  - c. time of filing/furnishing:
    - ☐ contained in the international application as filed.
    - ☐ filed together with the international application in computer readable form
    - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:



**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

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**Box No. II    Priority**

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1 ☒ The following document has not been furnished:

☒ copy of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(a)).

☐ translation of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(b)).

Consequently it has not been possible to consider the validity of the priority claim. This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.

2 ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43*bis*.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date

3 Additional observations, if necessary:

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**Box No. V    Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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1 Statement

Novelty (N)	Yes: Claims	3,6,8-10,13,16,19,21,24
	No: Claims	1,2,4,5,7,14,15,17,18,20
Inventive step (IS)	Yes: Claims	8,9
	No: Claims	3,6,10,13,16,19,21,24
Industrial applicability (IA)	Yes: Claims	1-24
	No: Claims	

2 Citations and explanations

**see separate sheet**



**Re Item V.**

**1. The following documents are referred to in this communication:**

D1 : US 5 798 631 A (SPÉE ET AL) 25 August 1998 (1998-08-25)

D2 : US 5225712 A (ERDMAN) 6 July 1993 (1993-07-06)

D3 : WO 02/103879 A (ABB AB) 27 December 2002 (2002-12-27)

**2. INDEPENDENT CLAIMS 1, 14.**

**2.1.** The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1 is not new in the sense of Article 33(2) PCT.  
Document D1 discloses (column 2, line 65 - column 19, line 59; figures 1-18) a method for operating a frequency converter (26,32,38) of a generator (20) connected to a wind energy turbine, said converter having a generator-side AC/DC converter (26), a DC link (32) and a DC/AC grid-side converter (38), said method comprising the generation of reactive current to be supplied to the grid by controlling the frequency converter, when a substantial grid voltage drop arrives.

**2.2.** Same applies, mutatis mutandis, to the independent claim 14.

**3. INDEPENDENT CLAIMS 10, 21.**

**3.1.** The present application does not meet the criteria of Article 33(1) PCT, because the subject matter of claim 10 does not involve an inventive step in the sense of Article 33(3)PCT for the following reasons:

Document D1, which is considered to represent the most relevant state of the art to the subject matter of claim 10, discloses (column 2, line 65 - column 19, line 59; figures 1-18) a method for operating a frequency converter of a generator connected to a wind energy turbine, the method comprising the generation of reactive current to be supplied to the grid by controlling the grid-side part of the frequency converter.

The subject-matter of independent claim 10 differs from the disclosure of D1 in that the generator is not in its operating state and the grid is in a substantially normal state.



The problem to be solved by the present invention may therefore be regarded as how to inject reactive power into the grid when the turbine generator is not in the operating state, when it supplies active power to the grid.

This feature is described in document D2 (static VAR mode) as providing the same advantages as in the present application. The skilled person would therefore regard it as a normal option to include this feature in the frequency converter described in document D1 in order to solve the problem posed.

**3.2.** Same applies, mutatis mutandis, to the independent claim 21.

**4. DEPENDENT CLAIMS 2 to 7, 11 to 13, 15 to 20, 22 to 24.**

The above mentioned claims do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of inventive step, because their features have already been employed for the same purpose in a similar frequency converters, as follows:

- concerning claims 3, 6, 10, 16, 19, 21 see document D2;
- concerning claims 11, 12, 22, 23 see document D1;
- for claims 13 and 24 see document D3.

It would therefore be obvious to the person skilled in the art, to apply these features with corresponding effect to a frequency converter according to document D1 thereby arriving at a frequency converter according to claims 2 to 7, 11 to 13, 15 to 20, 22 to 24.

**5. DEPENDENT CLAIMS 8 and 9.**

The combination of the features of dependent claims 8 and 9 is neither known from, nor rendered obvious by, the available prior art.

**6. OTHER IMPORTANT REMARKS.**

Although claims 1 and 10, of one side, and claims 14 and 21 have been drafted as separate independent claims, they appear to relate effectively to the same subject-matter and to differ from each other only with regard to the definition of the subject-matter for which protection is sought and in respect of the terminology used for the features of that subject-matter. The aforementioned claims therefore lack conciseness and as such do not meet the requirements of Article 6 PCT.